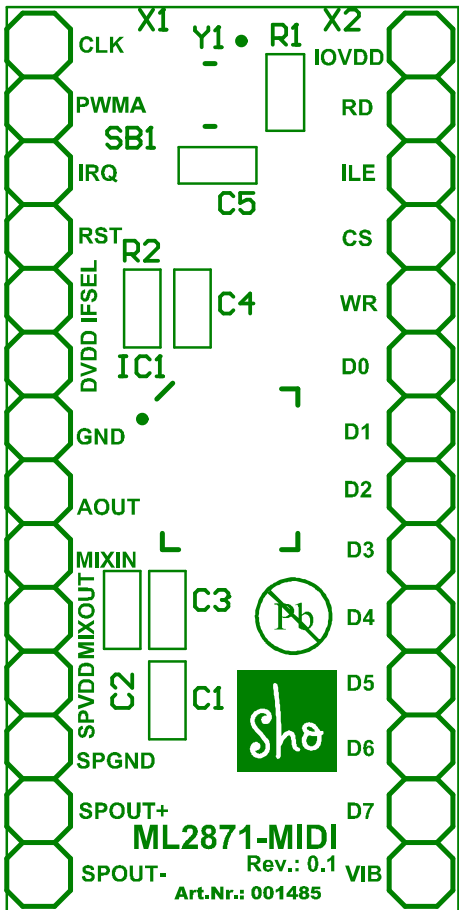


LPI  
Leiterplatte  
PCB MIDI28

Title <b>SHO-MIDI-2871</b>		S.Hofmann info@shotech.de www.shotech.de Revision: 0.0	
Size: A4	Description: MIDI/ADPCM and Amplifier Modul		
Date: 11.05.2021	Time: 22:13:21		
File: ML2871-Sheet1.SchDoc			

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extern Clock 2.7MHz to 34MHz ( Solder Bridge open ! )  
intern Clock 12.28800 MHz ( Solder Bridge close ! )

Clock intern / extern ( Solder bridge close / open )

Solder bridge for quartz oscillator

I/O voltage: +1.65V to DVDD

DVDD = +2.7 to +3.6V

Speaker voltage: DVDD ~ +4.5V

Speaker 1W / 80hm

Bill Of Materials

Item	Designator	Comment	Quantity
1	C1, C4, C5	100nF/50V	3
2	C2, C3	1µF/25V	2
3	IC1	ML2871	1
4	R1	47k	1
5	R2	22R	1
6	Y1	12.2880MHz	1

Serial Interface spec:

- IFSEL, D7, ILE, /RD, /WR set to GND.
- D0 = MOSI
- D1 = MISO
- D2 = SCLK
- D3 = ARQ ( optional to MCU - ADPCM FIFO requests next data = H )
- D4 = SRQ ( optional to MCU - SCORE FIFO requests next data = H )
- D5 = ERQ ( optional to MCU - EVENT FIFO requests next data = H )
- D6 = DIPH ( CPOL=0, CPHA=1 SPI Mode 1 DIPH = 0 )
- CS = Chip Select for SPI
- IRQ = INT PIN to MCU
- RST = Portpin to MCU ( RST is Low to High )

Parallel Interface:

- D0 .. D7: Databus ( wehn ILE pin is 'H' allow input to INDEX for Register addresses. )
- D0 .. D7: Databus ( wehn ILE pin is 'L' allow input and output of register values of internally set indexes. )
- ILE: connect to address pin A0 or A1 for read or write .
- /CS, /RD and /WR connectet to MCU Bus.
- IFSEL: set to High ( connectet to DVDD over resistor 10k )

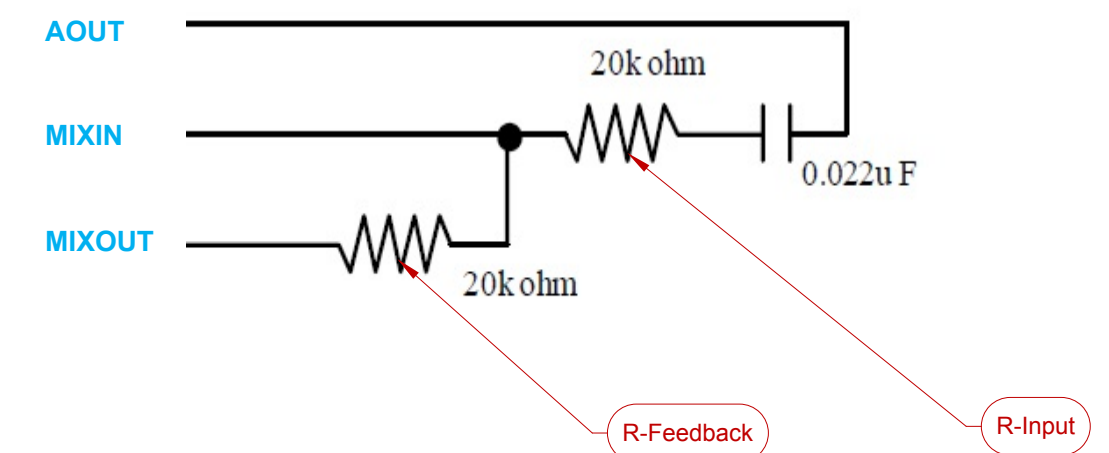
- Power supply: DVDD = +2.7 to 3.6V
- I/O voltage: +1.65V to DVDD
- Speaker voltage: DVDD ~ 4.5V

DAC - SPVDD = 3.6V

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
AOUT	VAOUT	DVDD=2.7V	-	1.3	-	Vp-p
AOUT	VAOUT	DVDD=3.0V	1.3	1.44	1.58	Vp-p
AOUT	VAOUT	DVDD=3.6V	-	1.73	-	Vp-p
Load Impedance of AOUT	RAOUT	After AC coupling	10	-	-	KOhm
Output Power	PWSP	f=1KHz, RSP=80hm, THD=2%	-	500	-	mW
Output Power	PWSP	f=1KHz, RSP=80hm, THD=10%	-	650	-	mW
Minimum Output Load Impedance	RSP		8	-	-	Ohm
Gain Range ( fixed )	GSP	RSP=80hm	-	7	-	dB

SP-Volume and DC-Offset Register (0x65)

SREF2-bit6	SREF1-bit5	SREF0-bit4	A-Times
0	0	0	0,5
0	0	1	0,55
0	1	0	0,6
1	1	1	0,65



Gain = R-Feedback / R-Input ( example AV=1 )

Fcuttoff = 1/( 2\*PI \* R-Input \* C-Input ) ( example = 350Hz for small size speaker )

Mixing Amplifier output Level = SPVDD / 2  
A Times = ( SPVDD/2 ) / DVDD.

example:  
SPVDD = 3,6V and DVDD = 3,3V  
A Times = ( 1,8V ) / 3,3V = ~ 0,55 ( 0,0,1 Offset Register )

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	shotech Steffen Hofmann	
DIMENSIONS ARE IN INCHES		DRAWN	S.Hofmann	11.05.2021	TITLE Soundgenerator MIDI28 Board
TOLERANCES:		CHECKED	sho		
FRACTIONAL ±		ENG APPR.			
ANGULAR: MACH ± BEND ±		MFG APPR.			
TWO PLACE DECIMAL ±		Q.A.	s.h		SIZE DWG. NO. 002214122019
THREE PLACE DECIMAL ±		COMMENTS:			SCALE: 1:1 WEIGHT: SHEET 1 OF 1
INTERPRET GEOMETRIC TOLERANCING PER:					
MATERIAL					
FINISH					
NEXT ASSY	USED ON				
APPLICATION					
DO NOT SCALE DRAWING					